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ABSTRACT

The report gives the results of a canonical correlation analysis of the 16 Personality Factor Questionnaire, Form E (16PF) and Personal Orientation Inventory (POI) scores for 299 Mountain-Plains students. The focus of the study was on population characteristic identification emerging from the canonical sets of the merged instrument descriptions. Two tables show canonical R's on the 16PF and POI scales for Mountain-Plains students and weights for canonical factors from the POI and 16PF scales. Results indicate considerable mutual validity for the scale descriptions. They are also seen to define generally unfavorable types in the population surveyed. The basic value of the study is confirmatory as regards program design in, and program emphasis on, affective development. A secondary value will be assisting counselors in test interpretation. The authors indicate that the report should be viewed as a data summary since the format and indepth consideration for a formal research report have not yet been pursued. (NH)

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# CANONICAL CORRELATION ANALYSIS OF POI AND 16PF SCALES FOR A RURAL DISADVANTAGED POPULATION

AN AFFECTIVE EVALUATION REPORT

COUNSELING SERVICES REPORT NO. 17
(IR-4-IV-040)

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## EXPLANATORY SUMMARY

This report gives the results of a canonical correlation analysis of 16PF Form E and POI scores for Mountain-Plains students. Results indicate considerable mutual validity for scale descriptions. They also are seen to define generally unfavorable personality types in the population surveyed.

This report is most appropriately viewed as a data summary. The format and indepth consideration for a formal research report have not yet been pursued.

## Introduction

Psychological characteristics of the Mountain-Plains population have been explored by interview methods culminating in development of Form A of the Participant Inventory, the Ensrud memorandum report in the Summer of 1973, and various Counseling Services Reports. The current study examines the interrelationship of the Sixteen Personality Factor Questionnaire, Form E (16PF) and Personal Orientation Inventory (POI) scales by canonical correlation. Focus of the study is on population characteristic identification emerging from the canonical sets of the merged instrument descriptions. Descriptions of the 16PF and POI scales are given in Appendices A and B respectively.

## Subjects

Subjects are 299 Mountain-Plains students (the student body is comprised of about 9% single female heads-of-household and the remainder of married couples). Subjects entered the Mountain-Plains Program from late summer, 1973, through winter, 1974, and include all students entering during this period except for a few (on the order of two percent) who were not tested due to administrative oversight. All subjects are young (average age of 26) adults of average aptitude (average GATB G score of 98) and defined as rural disadvantaged as per the Mountain-Plains entrance criteria (Mountain-Plains, 1973). These criteria are typical descriptors of disadvantaged populations with two qualifications, rural origin, and constitution of a family unit, and two exceptions, exclusion of severe medical problems, and exclusion of illiterates.

Results

Set one is characterized by highly negative weights for the POI I and Tc scales, a high positive weight for the Ex scale, and a moderately positive weight on the Fr scale[1]. This would characterize persons who are very dependent on the views of others for support, who daydream and/or worry a lot, who are somewhat insensitive to their own needs and feelings, but who are flexible in applying values. The 16PF scales in this set show moderate weights at best, including negative weights on the 16PF C and $Q_3$ scales and a low positive weight on the $Q_4$ scale. The 16PF description would indicate persons who are affected by their feelings (lower emotional stability), have a low integration (experience a great deal of self-conflict) and who are tense and frustrated. The merged scale seems to be describing a highly neurotic and disfunctional personality.

Merging the descriptions, it would appear that for persons who score unfavorably on most scales, a high score on Ex may more likely indicate a low level of value formulation than flexibility in applying formulated values.

Set two POI profiles show a highly negative weight on the I scale, and small negative weights on the Tc and Ex scales. This would indicate persons who are dependent upon the views of others for direction and support, and who have some tendency to

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[1] A high weight/correlation refers to those of 0.70 or above, intermediate or moderate weights/correlations to those between 0.40 and 0.69, and the terms some or low weight/correlation to those between 0.30 and 0.39. Weights/Correlations below 0.30 are not discussed.

daydream and/or worry excessively and who are inflexible in applying values. The 16PF $Q_4$ scale has a high positive weight in this set and the B scale a moderate negative weight; apparently describing persons with a high tension/frustration level and with somewhat lower intelligence. The merged scales are dominated by the traits of other directedness and tension.

Set three POI profiles show a high negative weight on the Ex scale, moderately negative weights on the Fr and Sa scales, moderately positive weights on the I, A and C scales. There is also a low positive weight on the Sr scale. This would appear to characterize persons who are rigid and inflexible in applying values, dependent upon others for direction and support, insensitive to their own needs and feelings, unacceptant of their weaknesses, but somewhat acceptant of their aggressive feelings and somewhat more able to have warm interpersonal relationships. One might speculate that the unfavorable descriptives derive from task rather than interpersonal areas because of the favorable A and C weights.

This set has moderate positive weights on the 16PF G and H scales and a moderately negative weight on the O scale. These scores indicate persons who are somewhat conscientious, venturesome, and self-assured.

The merged descriptions seem to indicate persons with rigid, other derived standards and values which they pursue by ignoring their own needs and feelings and who do not accept their failures to meet these standards. These persons' personalities seem to include adequate coping mechanisms for balancing unfavorable descriptions giving some degree of self-confidence and an ability to interact meaningfully in interpersonal relationships.

Set four shows a high positive weight for the POI Ex scale, high negative weights for the I and S scales, a moderately negative weight for the Sy scale, and moderately positive weights on the SAV, Sr, and A scales, and also a positive correlation on the Nc scale. This would appear to describe persons who are dependent upon the views of others for support and direction, and who are very reluctant to express feeling behaviorally. These persons also appear to see the opposites of life as antagonistic but tend more to: see man as essentially good, endorse the values of self-actualizing persons, have higher self-worth, and be acceptant of aggressive feelings.

Six 16PF scales have moderate weights in this set including: negative weights on the M and N scales and positive weights on the B, L, $Q_2$, and $Q_3$ scales. This would seem to describe persons who are practical, forthright, intelligent, suspicious, self-sufficient, and who have high self-concept control.

The merged descriptions would seem to indicate that the suspicious description on the 16PF may be more a healthy tendency to evaluate than any paranoid tendency (since the Nc scale on the POI indicates a positive view of human nature). The low spontaneity and high self-concept control may be coping mechanisms for the degree to which these persons depend upon the views of others for support.

TABLE I

CANONICAL R's ON 16PF AND POI SCALES FOR MOUNTAIN-PLAINS STUDENTS

| Set | Canonical R | Corrected for Shrinkage | 95% Confidence Interval Around Corrected R |
|---|---|---|---|
| 1 | 0.619 | .565 | 0.482 to 0.638 |
| 2 | 0.593 | .533 | 0.446 to 0.619 |
| 3 | 0.468 | .372 | 0.238 to 0.433 |
| 4 | 0.357 | .194 | 0.078 to 0.297 |
| 5 | 0.316 | .085 | ----- to 0.196 |
| 6 | 0.293 | ---- | ------ |
| 7 | 0.243 | ---- | ------ |
| 8 | 0.180 | ---- | ------ |
| 9 | 0.132 | ---- | ------ |
| 10 | 0.132 | ---- | ------ |
| 11 | 0.103 | ---- | ------ |
| 12 | 0.059 | ---- | ------ |

TABLE 2

WEIGHTS FOR CANONICAL "FACTORS" FROM POI AND 16PF SCALES

| Variable | Weights for Set 1 | Weights for Set 2 | Weights for Set 3 | Weights for Set 4 |
|---|---|---|---|---|
| POI Scales | | | | |
| Tc | -.63 | -.31 | -.18 | .20 |
| I | -.70 | -.72 | .41 | -.82 |
| SAV | .24 | .12 | -.02 | .46 |
| Ex | .92 | -.30 | -.81 | .94 |
| Fr | .46 | .19 | -.43 | -.22 |
| S | .19 | -.23 | .23 | -.76 |
| Sr | -.17 | -.13 | .31 | .38 |
| Sa | -.06 | -.09 | -.54 | -.15 |
| Nc | -.16 | .08 | -.10 | .33 |
| Sy | -.08 | .11 | -.13 | -.60 |
| A | .29 | -.07 | .56 | .50 |
| C | -.20 | .15 | .61 | .20 |
| 16PF Scales | | | | |
| A | -.04 | -.05 | .07 | .20 |
| B | .06 | -.42 | -.14 | .33 |
| C | -.32 | .02 | -.20 | .07 |
| E | .19 | -.24 | .20 | -.14 |
| F | .05 | -.22 | -.07 | -.22 |
| G | -.08 | .19 | .43 | -.08 |
| H | .11 | -.26 | .43 | -.04 |
| I | -.14 | -.21 | -.19 | .06 |
| L | .14 | -.10 | .25 | .45 |
| M | .20 | .14 | .12 | -.38 |
| N | .03 | -.02 | -.15 | -.50 |
| O | .10 | -.09 | -.44 | -.22 |
| $Q_1$ | .20 | -.09 | -.29 | .09 |
| $Q_2$ | -.02 | -.14 | .22 | .48 |
| $Q_3$ | -.44 | .08 | .20 | .32 |
| $Q_4$ | .33 | .80 | .22 | .14 |
| Corrected Canonical R | .57 | .53 | .37 | .19 |

Discussion

The scale descriptions for the two tests in each set appear to be highly compatible in that the emerging descriptions for each test are overlapping or complimentary (as opposed to contradictory). The exceptions noted in the previous section are also interpretable in terms of internal descriptions within each test with the canonical sets adding confidence. However, test score mutual prediction is of secondary interest in this study to the merged scale interpretation of population characteristics. The mutual loadings on the first set of correlates give a very negative population description. The only favorable weight, that on the Ex scale, emerges as probably an unfavorable description in light of the other POI weights and the 16PF correlates in this set. Set two gives a wholly negative description. Offsetting traits/coping mechanisms are not apparent in the traits included in these sets. This could conceivably indicate that persons so described may be dysfunctioning almost without mitigation in these areas.

Sets three and four are mixed descriptions indicating development of coping traits for some of the less favorable descriptions.

The current analysis used both male and female subjects. As scores for some scales differ by sex, a separate analysis of each sex might yield slightly different results and, therefore, might be considered when data is available on a sufficient number of subjects.

Formative Implications

Overall, the correlation patterns tend to reinforce the negative description and

low self-variable development[2] reflected in such documents as Counseling Services Reports No. 4, 11, and 12. The basic value of the study is confirmatory as regards program design in and program emphasis on affective development. A secondary value will be assisting counselors in test interpretation.

[2] "Set one people" would appear to need intensive extensive attention in all program areas; particularly counseling. The set one description is almost unbelievably negative. "Set two people" are seen as similar, but the lower intelligence indicates that an added focus of attention may need to be individual help in instructional areas. "Set three people" show mixed descriptions and would seem to have more normal needs which can be met with "normal" counseling and instructional area attention. "Set four people", while not models of positive mental health, can probably cope with minimal special attention.